

PATIENT SAFETY



Using FRAM to design change in Quality Improvement projects

A case study using primary care sepsis identification and management

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Effective improvement intervention

- Rigorously define the problem
- Understand system
 - System readiness for change
 - Contextual factors which could impact on the feasibility and effectiveness
 - How intervention fits with current work system
- Understand goals, skills, networks of those in system
- Co-design improvement interventions - ability to adapt it to local conditions

Sepsis

NICE National Institute for
Health and Care Excellence



80% begin in
community

Sepsis: recognition, diagnosis and early management

NICE guideline

Published: 13 July 2016

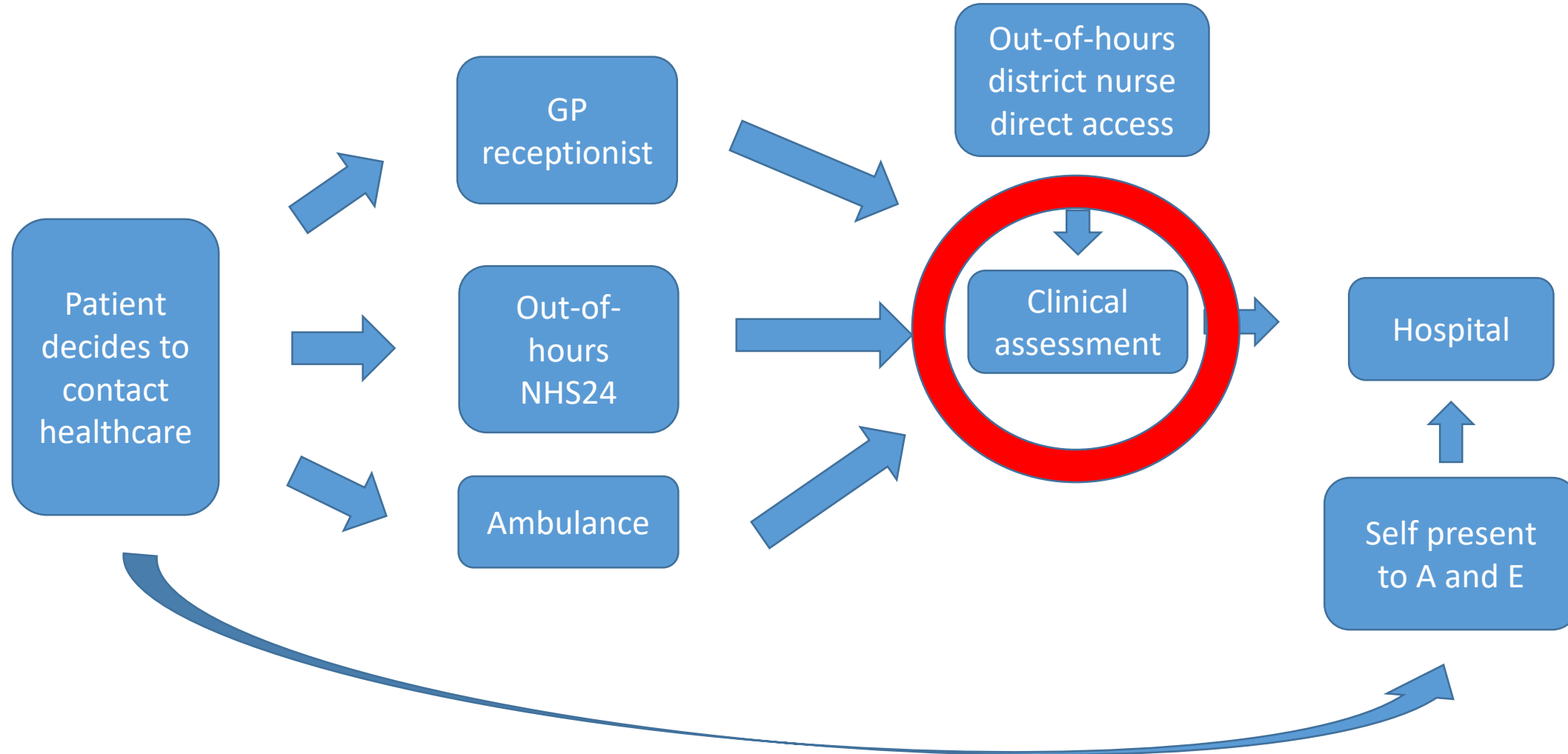
[nice.org.uk/guidance/ng51](https://www.nice.org.uk/guidance/ng51)

Stratify risk

- Pulse
- Temperature
- Respiratory rate
- Blood pressure
- Oxygen level
- Consciousness level

Early treatment

Sepsis identification and management



Improvement efforts



AA Child Sepsis

Child Sepsis Template used ☒ [Click here for NICE Guidance - Traffic light system for identifying risk of serious illness](#)

BP

Systolic blood pressure mm Hg
Diastolic blood pressure mm Hg

Colour (skin, lips or tongue)

Colour normal ☐ Pallor reported by parent/carer ☐ Pale ☐ Blue lips ☐
Mottled ☐ Ashen ☐

Respiratory

Normal RR ☐ Respiratory Rate /min
6-12 months: >60 breaths/min
>12 months: >40 breaths/min
SpO2 - Oxygen saturation at periphery %
≤95% in air
Crackles in the chest ☐

Circulation and hydration

Normal HR ☐ Pulse Rate beats/minute
Capillary refill time seconds
CRT >=3 seconds
Dry mucous membranes
Poor feeding in infants
Reduced urine output

Other

Core temperature C
Fever - general ☐

Age 3-6 months: temperature >=39 C
Fever for >=5 days
Non-blanching rash
Rigors
Joint Swelling
Swelling of limb
Non-weight bearing limb

Age <3 months: temperature >=38 C
Non-blanching rash
Neck stiffness
Bulging fontanelle
Focal fit
Focal neurological signs

Sepsis

OK Cancel

NHS, Ayrshire and Arran, 2016, Delosca, Version 5.0

PHYSIOLOGICAL PARAMETERS	3	2	1	0	1	2	3
Respiration Rate	≤8		9 - 11	12 - 20		21 - 24	≥25
Oxygen Saturations	≤91	92 - 93	94 - 95	≥96			
Any Supplemental Oxygen		Yes		No			
Temperature	≤35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥39.1	
Systolic BP	≤90	91 - 100	101 - 110	111 - 219			≥220
Heart Rate	≤40		41 - 50	51 - 90	91 - 110	111 - 130	≥131
Level of Consciousness				A			V, P, or U

*The NEWS initiative flowed from the Royal College of Physicians' NEWS DIG, and was jointly developed and funded in collaboration with the Royal College of Physicians, Royal College of Nursing, National Outreach Forum and NHS Training for Innovation.

Sepsis – aims

- To understand current system
 - Contextual factors which could impact on the feasibility and effectiveness
 - Understand goals, skills, networks of those in system
- Co-design improvement intervention
 - Intervention fits with current work system



Sepsis – data collection

- Interview of staff (n=22)
 - Understand system and identify areas for improvement
 - GP, GPST, GP receptionist, ANPs, NHS24, District nurses, Combined Assessment Unit (CAU), A and E, Out of hours admin and clinical teams
- Case note review
 - 50 adult out-of-hours admissions due to infective condition
 - 76 adult in-hours admissions due to infective condition

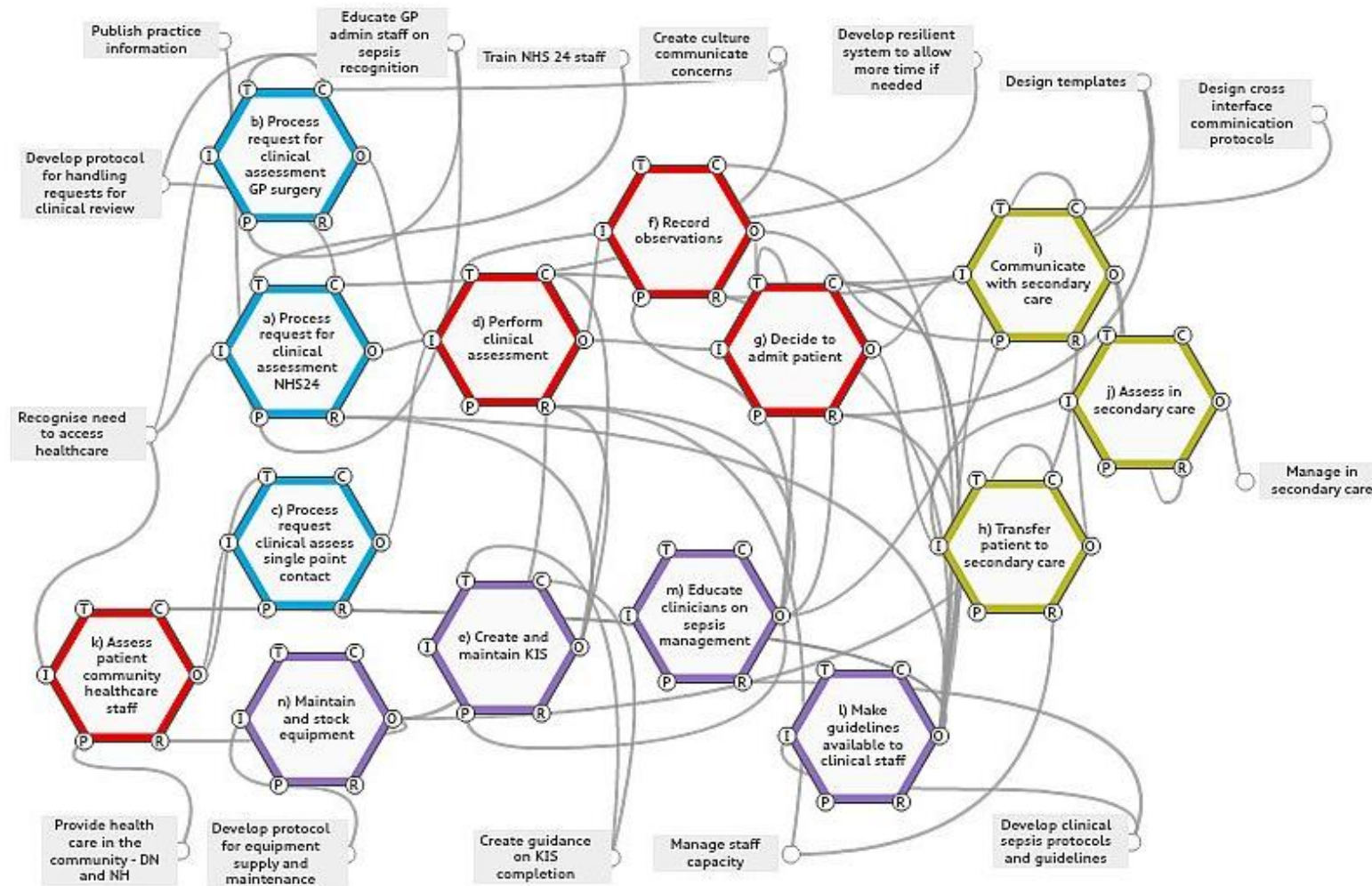
Sepsis – analysis

- Identify functions
- Use as themes within qualitative data manager
- Identify function aspects
- Assess function variability – quantitative and qualitative data
- Analysis of qualitative data of possible areas for improvement

Co-design of improvement intervention

- FRAM workshop and workbook
 - Data presented for each function – conditions, interactions, variability
- Reconcile improvement suggestion themes with current work systems
 - How fit with current work systems?
 - How affect other parts of system?

Sepsis - FRAM



Suggested areas for improvement

- Feedback to facilitate reflective learning
- Communication pathways
- Early warning scores
- Electronic templates
- Education – administrative and clinical staff
- Key information summaries

Feedback to facilitate reflective learning

- System based reflective tool
- Facilitate co-design local protocols
- Explore their role in system and effects of performance variability



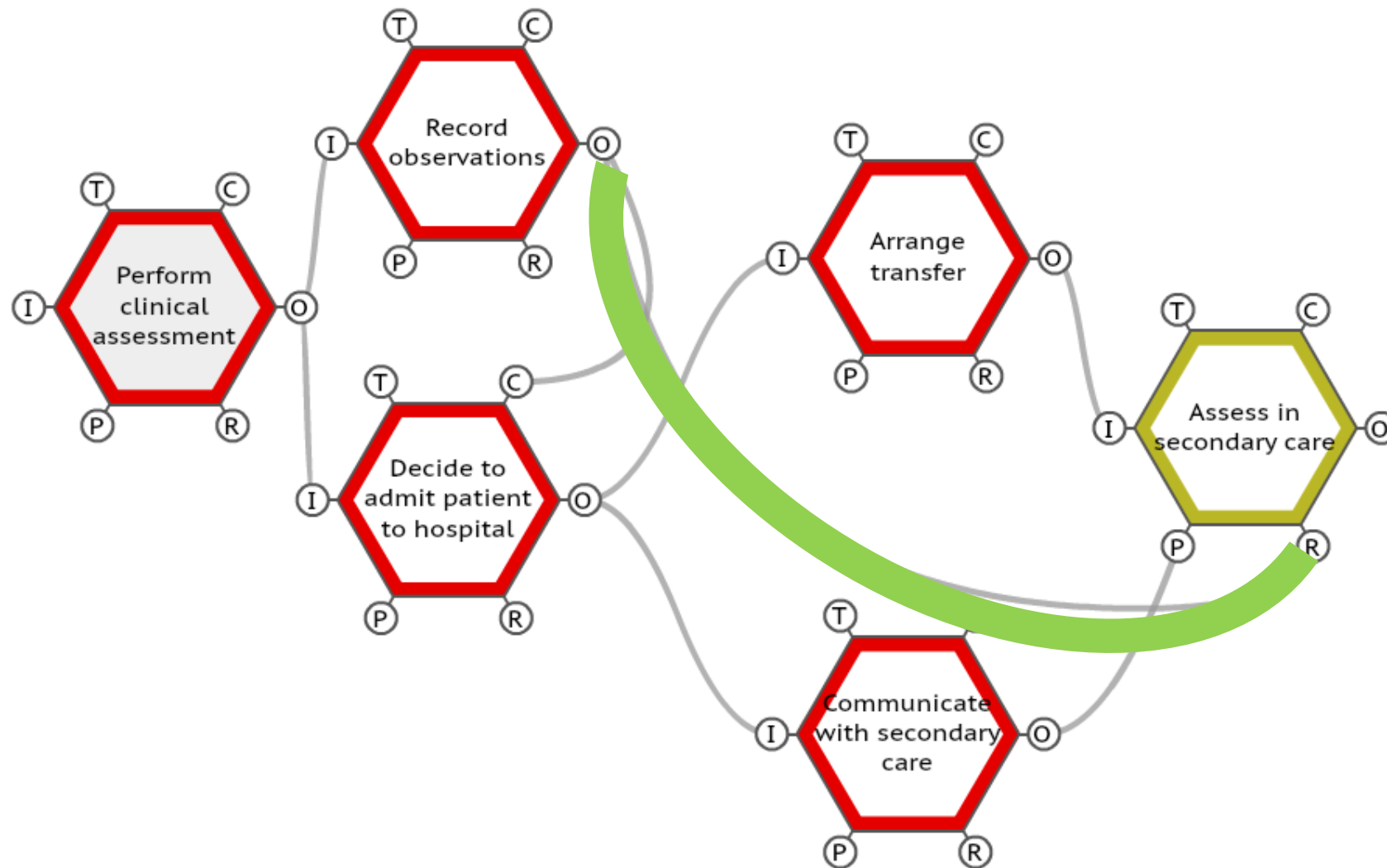
Explore effects of performance variability

Admissions from out-of-hours and in-hours with an infective cause	Number (%) with all physiological parameters recorded
Out of hours admission with infective cause (n=50)	32 (64)
Out of hours admission and sepsis mentioned as possible cause (n=29)	10 (34)
In-hours GP admissions with infective cause (n=76)	11 (14.5)
In-hours GP admissions where sepsis mentioned as possible cause (n=11)	2 (18.2)

Explore effects of performance variability

- *“I saw this man on a visit and from the moment I walked in I knew I was admitting him. We had the information that he was getting chemo and was a bit shaky. I did his temp and pulse and thought – right you’re going in – so I didn’t do the other values.” GP2*
- Essential that we understand the potential effects at a local and wider system level - **incorporated into reflective case tool**

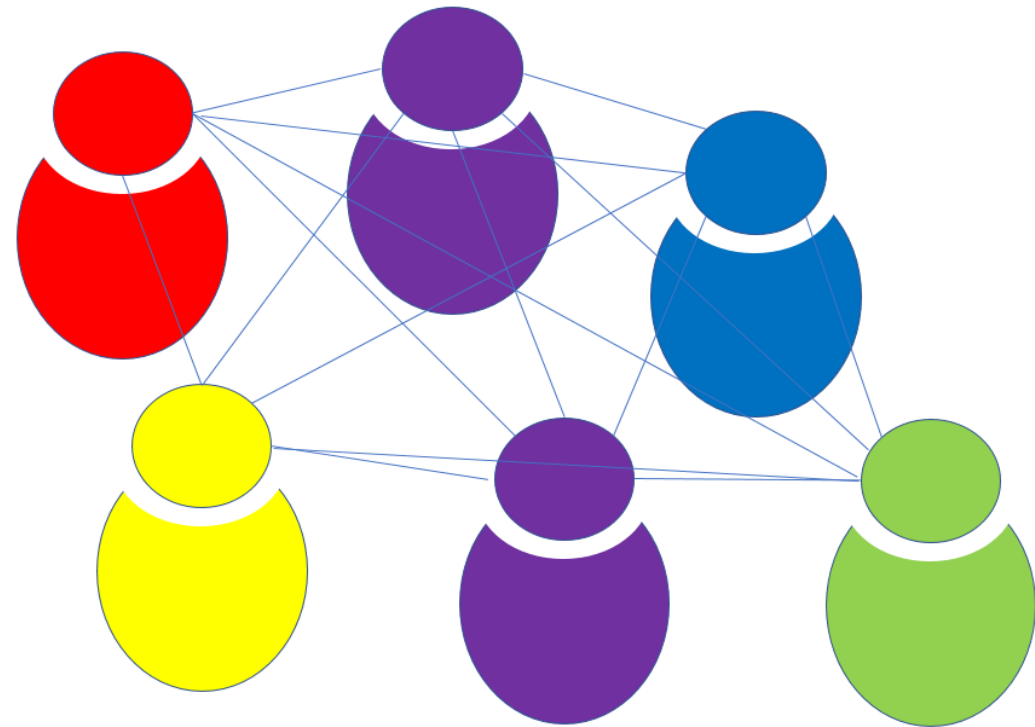
Communication pathways



Early warning scores

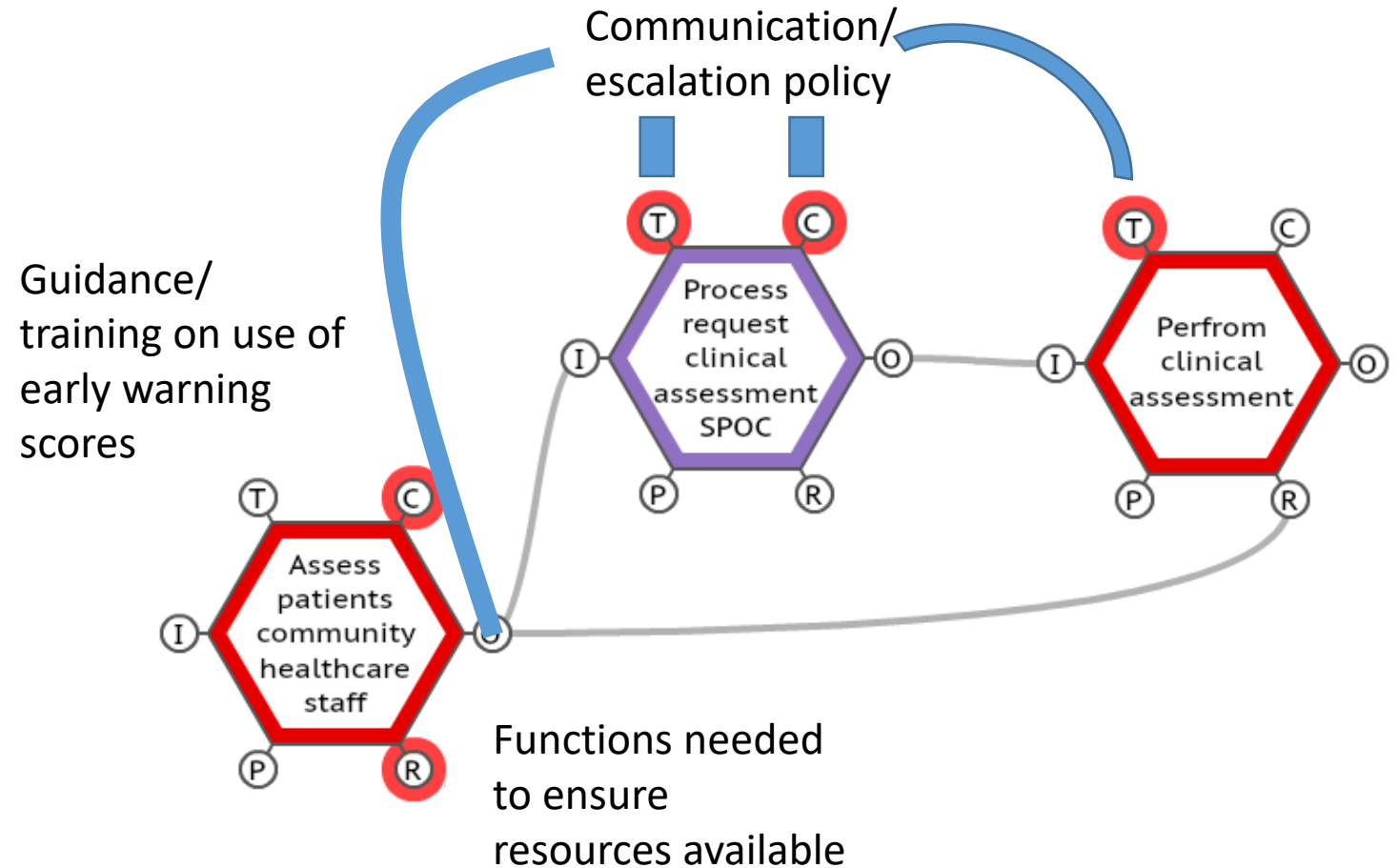
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Early warning scores - pilot with community nurses

- Consider how proposed changes influence rest of system
- Identify concerns regarding change



Electronic templates

- “You’re typing in as you’re going to the next visit while on the phone to the hospital – the (electronic) template is not helpful or usable” GPST3

- Inform national work

AA Child Sepsis

Child Sepsis Template used ☒

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Mottled ☐ Ashen ☐

Respiratory

Normal RIR ☐ Respiratory Rate /min
6-12 months >60 breaths/min
>12 months >40 breaths/min

SpO2 - Oxygen saturation at periphery %

Nasal flaring ☐ Grunting ☐
<95% in air ☐ Moderate or severe chest indrawing ☐
Crackles in the chest ☐

Circulation and hydration

Normal HR ☐ Pulse Rate beats/minute
<1 >160 beats/min
1-2 >150 beats/min
2-5 >140 beats/min
5-12 >120 beats/min

Capillary refill time seconds
CRT >=3 seconds
Dry mucous membranes ☐
Poor feeding in infants ☐
Reduced urine output ☐

Other

Core temperature C
Fever - general ☐

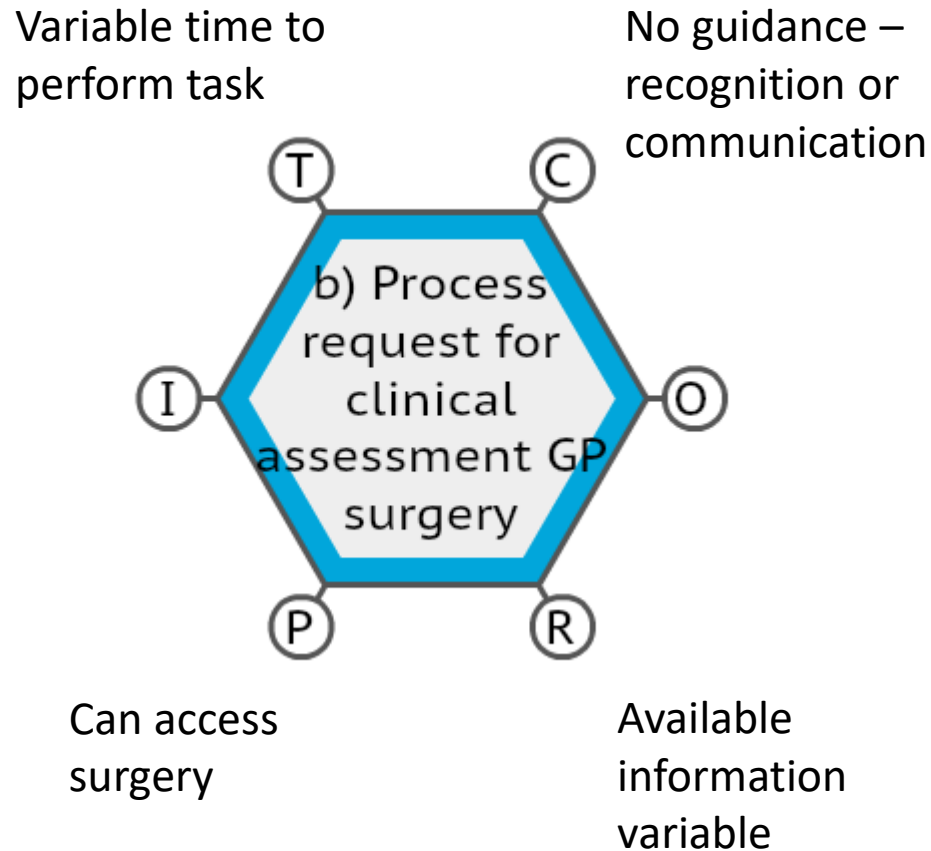
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Non-blanching rash ☐
Neck stiffness ☐
Bulging fontanelle ☐
Focal fit ☐
Focal neurological signs ☐

OK Cancel

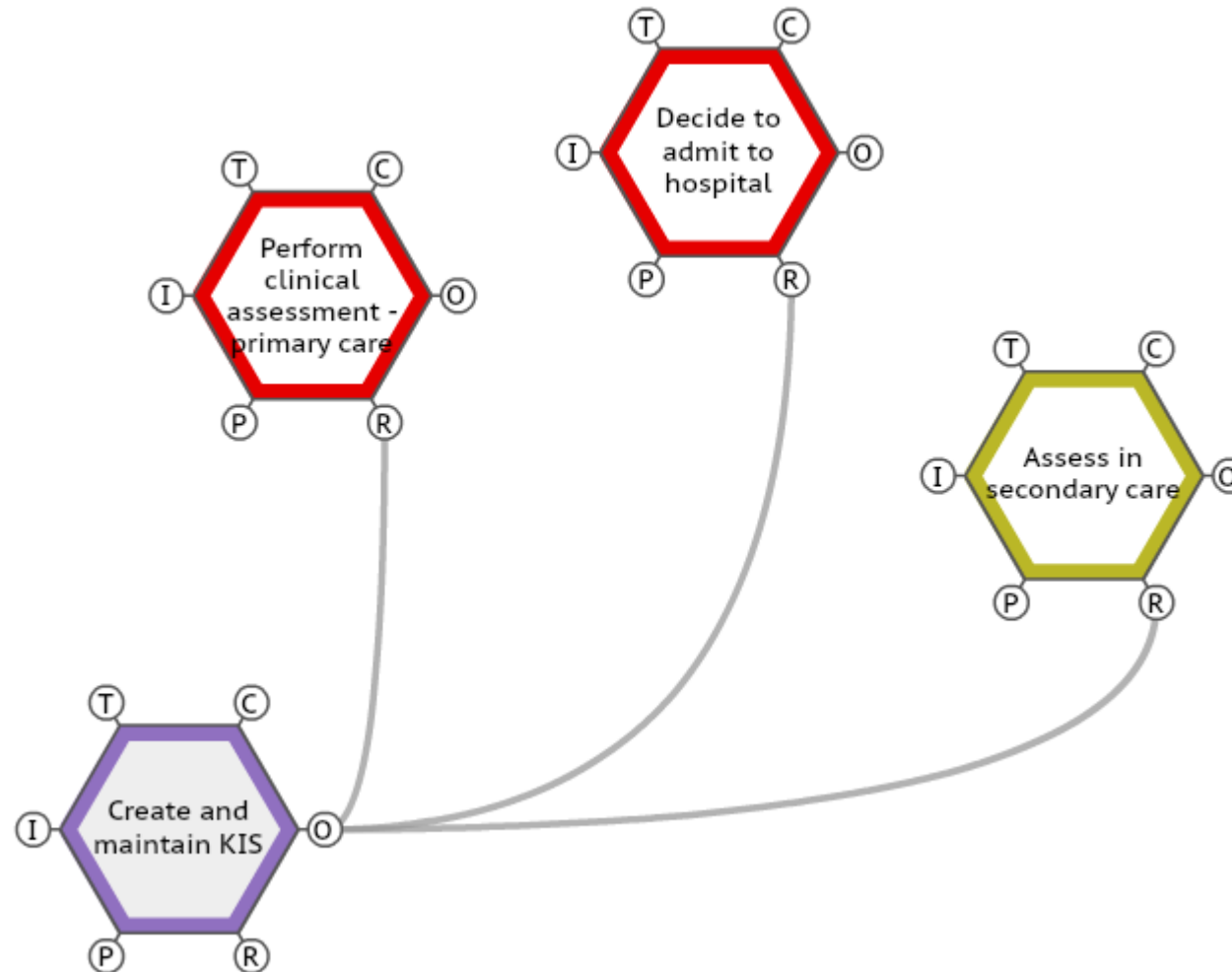
NHS.uk, Aitchison and Barron - 2015; Delaney - Vaccines 5.0

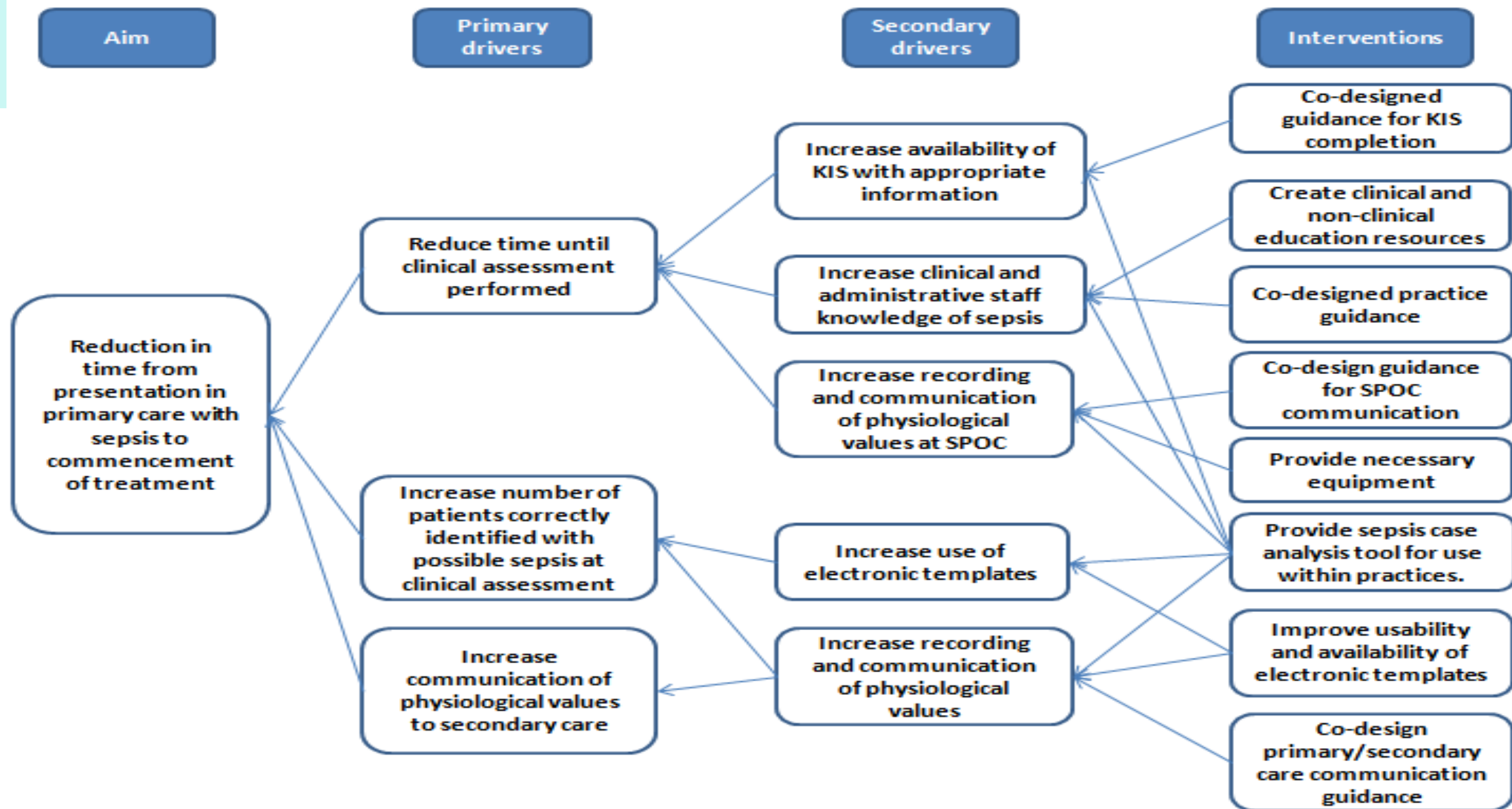
Education – administrative and clinical staff



- Obtain multiple perspectives on system functioning
- Exploring work-as-done vs work-as-imagined
- *“In general our staff are good at saying this person doesn't sound well and they let us know quickly” - GP3*
- *“I don't know if I would necessarily recognise it in a patient coming in because a lot of it is like fever and sickness - it could be anything..” - Receptionist 2*

Key information summaries





Conclusions

- Aim of Quality Improvement is to improve overall system performance not one component
- FRAM can help
 - Those designing change to understand the system in its specific context
 - Reconcile improvement suggestions with work-as-done
 - Consider how changes affect whole system and individuals in system

PATIENT SAFETY

